

PATENT SPECIFICATION

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300,335

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PROVISIONAL SPECIFICATION.

Improvements in Machines for Applying Cream and the like Material to Biscuits and the like.

- We, T. AND T. VICARS LIMITED, of Earlestown, Newton-le-Willows, in the County of Lancaster, a British company, and EDWARD MILNER CROSLAND, of "Kirkby", High Street, Newton-le-Willows, in the County of Lancaster, a British subject, do hereby declare the nature of this invention to be as follows:—
- 10 The present invention relates to improvements in machines for automatically applying cream or the like to biscuits.
- 15 In machines of this type it has been usual to provide means for feeding a biscuit into contact and in suitable position relatively to a movable and flexible stencil band which is displaced relatively to a hopper for supplying cream or is
- 20 pressed into contact with a stationary stencil plate against which a movable hopper is laterally displaced.
- According to the present invention the biscuits are brought one at a time opposite a stencil opening in a rigid stencil plate which has a displacement relatively to cleaning devices, such as brushes or scrapers.
- 30 The rigid plate may be in the form of a reciprocating slide, but is preferably in the form of a rotating disc which is provided with a number of stencils around its periphery and which can be fed forward step by step or continuously to bring one of these stencil discs at a time
- 35 under a hopper supplied with cream, icing or the like material.
- Means such as an endless chain may be provided to bring biscuits one at a time in contact with the stencil. This chain may for instance, be mounted on sprockets rotating about vertical axes and the biscuit carriers on this chain can be hinged about horizontal pivots provided with spring or the like means for bringing them up into contact with the stencil.
- 40 The endless chain may bring the biscuit supports under a perforated plate moving under a hopper for receiving biscuits one at a time from this hopper, and allowing these to drop through the plate on to the supports on the carrier chain. Biscuits may then be conveyed under the rotating stencil and then can be brought by means of the carrier chain under a third rotating plate co-axial with the sprocket spindle to receive a further biscuit where it is desired to manufacture sandwich biscuits.
- 50 Suitable cam paths can be provided for controlling the biscuit carriers and these carriers may be provided with stops for retaining the biscuit with a false bottom so that the biscuits can be readily ejected therefrom when completed.
- 55 It is preferred that the feeding discs for the biscuits are of a thickness substantially equal to the thickness of the biscuits, the side of one perforation being normal to the surfaces of the disc, whilst the other side is inclined thereto, so that the biscuit may fall gradually into an opening from the hopper.
- 60 Dated this 31st day of August, 1927.
- W. P. THOMPSON & Co.,
12, Church Street, Liverpool,
Chartered & Registered Patent Agents.

COMPLETE SPECIFICATION.

Improvements in Machines for Applying Cream and the like Materials to Biscuits and the like.

- 75 We, T. AND T. VICARS LIMITED, of Earlestown, Newton-le-Willows, in the County of Lancaster, a British company, and EDWARD MILNER CROSLAND, of "Kirkby", High Street, Newton-le-Willows, in the County of Lancaster, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—
- 80 The present invention relates to
- [Price 1/-]

machines for automatically applying cream or the like to biscuits.

In machines of this type it has been usual to provide means for feeding a biscuit into contact with and in suitable position relatively to a movable and flexible stencil band which is displaced relatively to a hopper for supplying cream or the biscuit is pressed into contact with a stationary stencil plate against which a movable hopper is laterally displaced.

According to the present invention the biscuits are brought one at a time opposite a stencil opening in a rigid stencil plate which has a displacement relatively to cleaning devices, such as scrapers.

The rigid plate is preferably in the form of a rotating disc which is provided with a number of stencils or perforations around its periphery and which can be fed forward step by step or continuously to bring these stencils one at a time under a hopper supplied with cream, icing or the like material.

Means such as an endless chain may be provided to bring biscuits one at a time in contact with the stencil. This chain may for instance, be mounted on sprockets rotating about vertical axes and the biscuit carriers on this chain can be hinged about horizontal pivots provided with means for bringing them up into contact with the stencil.

The endless chain may bring the biscuit carriers under a perforated plate moving under a hopper for receiving biscuits one at a time from this hopper, and allowing these to drop through the plate on to the supports on the carrier chain. Biscuits may then be conveyed under the rotating stencil and then can be brought by means of the carrier chain under a third rotating plate co-axial with the sprocket spindle to receive a further biscuit where it is desired to manufacture sandwich biscuits.

Suitable cam paths can be provided for controlling the biscuit carriers and these carriers may be provided with stops for retaining the biscuit with a false bottom so that the biscuits can be readily ejected therefrom when the process has been completed.

It is preferred that the feeding discs for the biscuits are of a thickness substantially equal to the thickness of the biscuits, the side of one perforation being normal to the surfaces of the disc, whilst the other side is inclined thereto, so that the biscuit may fall gradually into an opening from the hopper.

The invention is more particularly described with reference to the accompanying drawings in which:—

Figure 1 is an elevational view, partly in section, of a preferred form of construction.

Figure 2 is a corresponding plan view.

Figure 3 is a part sectional elevation of the mechanism for obtaining automatic movement of the hoppers and magazines.

Figure 4 is a part sectional elevation of the mechanism controlling the passage of the biscuit from the hopper to carrier.

Figure 5 shows the method of discharging the biscuit from the carrier when treatment is finished.

Figure 6 is a plan view of part of the mechanism shown in Figure 3 for causing automatic movement of magazines.

Figures 7, 8, 9, 10 shows alternative forms of construction of the biscuit carrying and ejecting mechanism.

Referring to the drawings, discs 1, 2, and 3, having perforations of suitable shape are rotatable about spindles 4, 5 and 6 respectively. Rotatable with these discs are sprocket wheels 7 in mesh with an endless chain 8 which carries biscuit carriers 9.

Pulleys 13, on a spindle 14 take the drive from a source of power and by means of gearing 15, 16, 17 cause the disc 1 through its sprocket wheel 7 to rotate. The chain 8 transmits the motion to discs 2 and 3.

Each carrier 9 is caused to oscillate, at given points in its path round the machine, about a fulcrum 10, so as to alter its vertical disposition relative to the discs. Each carrier 9 is provided with a roller 11 contacting with a cam path 12 for obtaining said oscillation whilst it is also provided with a second roller 23 in contact with a cam path 24, said roller 23 being connected to a false bottom 25 of the carrier 9 for ejection of the biscuit (Figures 1 and 5).

Disc 1 may be called the transfer disc, in that it is here that the biscuits 19 are transferred from a hopper 18 to the carriers 9. Each biscuit is then conveyed in its carrier to the disc 2 where it is iced or creamed and thence to the disc 3 where another biscuit may be laid upon it in order to form a sandwich, after which it is ejected from the carrier as described above.

A plurality of biscuit hoppers 18 are detachably secured in a magazine 29 revoluble, as described below, on the shaft 4 to bring each hopper into use in succession, each hopper being open at the top and partially closed at the bottom by spring retainers 30 (Figure 3) which are caused automatically to move clear of the bottom of the hopper when the hopper is placed in position in the magazine. The

hopper in use is located at B (Figure 2) and the biscuit assumes its position totally within the carrier at position C. A stationary reception plate 20 beneath disc 1 is located beneath the hopper at B and extends substantially up to, but not beneath the hopper at C. A plate 31 (Figures 1 and 2) is located above the disc 1 and extends beneath all hoppers except that located at B. Thus when the disc rotates in the direction indicated by the arrow R (Figure 2) as any perforation comes under the hopper at B, the lowermost biscuit falls first upon an inclined leading wall 49 of the perforation, then wholly into said perforation, when it is moved along the plate 20 by abutment with a vertical following wall 50 until plate 20 terminates when the biscuit falls into a carrier 9 which synchronises with the perforation at this point.

The stationary plate 31 prevents the biscuits from falling into the transfer disc 1 unless the hopper is in the correct feeding position shown at B (Figure 2).

Each carrier 9, when about to receive a biscuit is lifted so as to be in close proximity with the disc 1, by means of roller 11 and cam path 12 and is lowered clear of the face of disc 1 after having received the biscuit.

The magazine 29 is freely rotatable about the spindle 4. Located on top of the biscuits in each hopper is a contact plate 32 (Figures 3 and 6) which falls as the biscuits are removed from the bottom.

When the last biscuit falls onto transfer disc 1, a projection 53 on the contact plate catches in a slot 68 in the disc 1 and the magazine 29 is rotated with the disc until the stationary plate 31 having a bevelled edge 54 lifts the contact plate clear of the disc causing the magazine to stop and bringing a full hopper, previously located at A, into position at B.

The chain 8 carries the biscuit and carrier to disc 2 which has holes or perforations 21 which are usually smaller than the biscuit. Whilst these perforations are shown rectangular in the drawings, they may, of course, be in the shape of a flower or any other decoration according to the deposit of cream or icing required.

Mounted above this disc 2 with an open end contacting with it is a readily detachable hopper 22 containing cream or icing. The biscuit is lifted, by means of roller 11 and cam path 12, into contact with the disc just as the stencil opening passes under the cream hopper so that a charge of cream is delivered through the stencil plate or disc 2 onto the biscuit beneath.

Various methods may be employed for

forcing the cream downwards in the hopper in order to ensure that the stencils may be properly filled. The method shown in the drawings consists of a pair of rollers 34, 35 situated within the hopper 22 which are caused to revolve towards one another by means of gearing 36 and bevel wheels 37, 38.

A scraper 55 is provided on one side of disc 2 in order to clean said disc after a biscuit has been creamed and before a fresh biscuit is presented to the stencil opening.

If desired, a second scraper may be provided to operate on the other side of said disc. The scraper 55 is mounted so as to be rotatable about an axis 56, which is parallel with the plane of said disc, whilst it is also rotatable about another axis 57 perpendicular to said disc so as to be movable along the surface of said disc, and to be bodily displaced towards or away from said disc. It is obvious that brushes or other cleaning devices may be used additionally or alternatively to said scrapers.

After the biscuit has passed the creaming hopper, it is lowered from disc 2 by means of the said roller 11 and cam path 12 and is conveyed to disc 3 where another biscuit is placed over the creamed one to form a sandwich. The mechanism employed in connection with disc 3 is similar to that of disc 1.

After the completed sandwich has passed clear of disc 3 it is ejected (see Figure 5) by means of roller 23 contacting with cam path 24 and lifting false bottom 25 so as to allow the sandwich 26 to slide down chute 27 to conveyor belt 28.

An alternative method of operating the biscuit carriers is shown in Figures 7 and 8.

A carrier bracket 39 is rigidly fixed to chain link 40; carrier stem 41 is slidable vertically through the bracket and cam path 42 lifts the carrier. A false bottom 43 is shown hinged at 44 and is operated by roller 45 contacting with a cam path not shown.

A further alternative method is shown (Figures 9 and 10) where two chains 46 and 47 are adapted for holding the carrier 48 whereby greater rigidity is maintained.

In the drawings, three discs 1, 2, 3, are provided and as a result of this the biscuit which is prepared is in the form of an ordinary sandwich. It is obvious however, that numerous modified arrangements may be adopted without departing from the scope of the invention in order to prepare biscuits of varying forms. For example, if it is desired to automatically

apply cream to a biscuit in the form of a double sandwich, three transfer discs and two creaming discs are provided, the transfer discs and creaming discs being
 5 situated alternately around the conveyor. Further, if it is desired to form a sandwich comprising two biscuits with two different kinds of cream or the like
 10 between said biscuits, such as for example, a sandwich with a layer of jam surrounded by a layer of cream in the same plane between a pair of covering biscuits, then two transfer discs would be
 15 employed, one for the biscuit forming the base and one for the biscuit forming the top, with two creaming discs interposed between said transfer discs.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to
 20 be performed, we declare that what we claim is:—

1. A machine for automatically applying cream or the like material to biscuits
 25 or the like in which the biscuits are brought opposite a stencil opening in a rigid stencil plate which is capable of displacement relative to brushes, scrapers or other cleaning devices engaging with one
 30 or both sides of the plate to clean this after a biscuit has been creamed and before a fresh biscuit is presented beneath the stencil opening substantially as described.

2. A machine for automatically applying cream or the like material to biscuits
 35 or the like, in which the cream is applied through one or more stencil plates which are in the form of flat rotatable discs, each disc being provided with a number
 40 of stencil openings substantially adjacent its periphery so that the disc may be rotated either step by step or continuously to bring these openings, one at a time
 45 under a hopper containing cream, icing or the like material substantially as described.

3. A machine for automatically applying cream or the like to biscuits and the
 50 like consisting of a plurality of perforated discs the perforations of one of which are successively brought beneath a hopper or the like for the transfer of the biscuits therefrom to carriers whilst the perfora-
 55 tions of a second disc are successively brought into position above the carriers at a point displaced from the supply of the biscuits to the carriers in order to allow of the application of cream to said bis-
 60 cuits substantially as described.

4. machine for automatically applying cream or the like material to biscuits or
 65 the like as claimed in Claim 3 in which the transfer device includes a flat rotatable disc having perforations therein to

allow of the passage of biscuits or the like therethrough, one side of each of said perforations being normal to the surface of said disc whilst the other side is inclined thereto substantially as described. 70

5. A machine for automatically applying cream or the like material to biscuits or the like as claimed in Claims 3 and 4 in which a stationary reception plate is
 75 situated beneath the rotatable perforated transfer disc whereby a biscuit, having fallen from the hopper, is retained for a period of rotation of the disc within the perforation in the disc before being transferred to the carrier substantially as described. 80

6. A machine for automatically applying cream or the like material to biscuits or the like as claimed in Claim 1, 2 or 3, in which one or more additional discs are
 85 provided beneath which each creamed biscuit is adapted to pass and to receive one or more additional biscuits for covering the cream to form a single or multiple sandwich substantially as described. 90

7. A machine for automatically applying cream or the like material to biscuits or the like as claimed in Claim 6 in which said additional disc or discs are
 95 provided in the return path of travel of the carriers from the creaming device to the initial transfer mechanism of the biscuits from the hopper substantially as described.

8. A machine for automatically applying cream or the like material to biscuits
 100 or the like as claimed in Claim 7 in which when three discs are employed these are substantially triangularly disposed and are each driven from one or
 105 more endless chains common to all discs substantially as described.

9. A machine for automatically applying cream or the like material to biscuits
 110 or the like as claimed in Claim 6 in which the additional disc or discs at which the sandwich is formed are constructed and operate similarly to the initial transfer disc substantially as described.

10. A machine for automatically applying cream or the like material to biscuits
 115 or the like as claimed in any of the preceding claims, in which one or more endless chains, engaging with toothed sprockets connected to the discs, support a series of movable carriers, adapted for
 120 holding and conveying biscuits, in such a manner that the position of each carrier shall coincide in turn with one of the perforations of each disc substantially as described. 125

11. A machine for automatically applying cream or the like material to biscuits
 130 or the like as claimed in Claim 10 in which suitable cam faces act on said bis-

5 cuit carriers in order to move any carrier into close proximity with a disc as said carrier is about to move into coincidence with a perforation in said disc substantially as described.

10 12. A machine for automatically applying cream or the like material to biscuits or the like as claimed in any of the preceding claims in which each carrier has a false movable bottom which may be displaced by lifting or rotation during the cycle of operations so as to eject the biscuit from the carrier substantially as described.

15 13. A machine for automatically applying cream or the like material to biscuits or the like as claimed in any of the preceding claims in which a plurality of detachable hoppers are provided for supplying biscuits to the machine, said hoppers being divided into two or more groups, each of which is accommodated in a magazine substantially as described.

20 14. A machine for automatically applying cream or the like material to biscuits or the like as claimed in Claim 13 in which means are provided for automatically revolving the magazine to bring a full hopper at any instant into the correct position for delivery biscuits in place of a hopper just emptied substantially as described.

15. A machine for automatically applying cream or the like material to biscuits or the like as claimed in Claims 13 and 14 in which spring operated catches retain the biscuits in position in a hopper when the hopper is detached from the magazine, said catches being automatically opened to allow the biscuits to fall through when said hopper is fixed in the magazine, substantially as described.

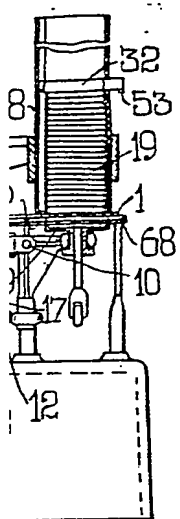
16. A machine for automatically applying cream or the like material to biscuits or the like as claimed in Claims 1 and 2 in which a readily detachable hopper containing cream or the like is provided with rollers or the like revolving in such a manner as to put a slight pressure on said cream in order that any opening in the stencil passing beneath said hopper may be completely filled substantially as described.

17. A machine for automatically applying cream or the like material to biscuits or the like constructed and arranged to operate substantially as described with reference to the accompanying drawings.

Dated this 29th day of June, 1928.

W. P. THOMPSON & Co.,
12, Church Street, Liverpool,
Chartered & Registered Patent Agents.

SHEET 1



13

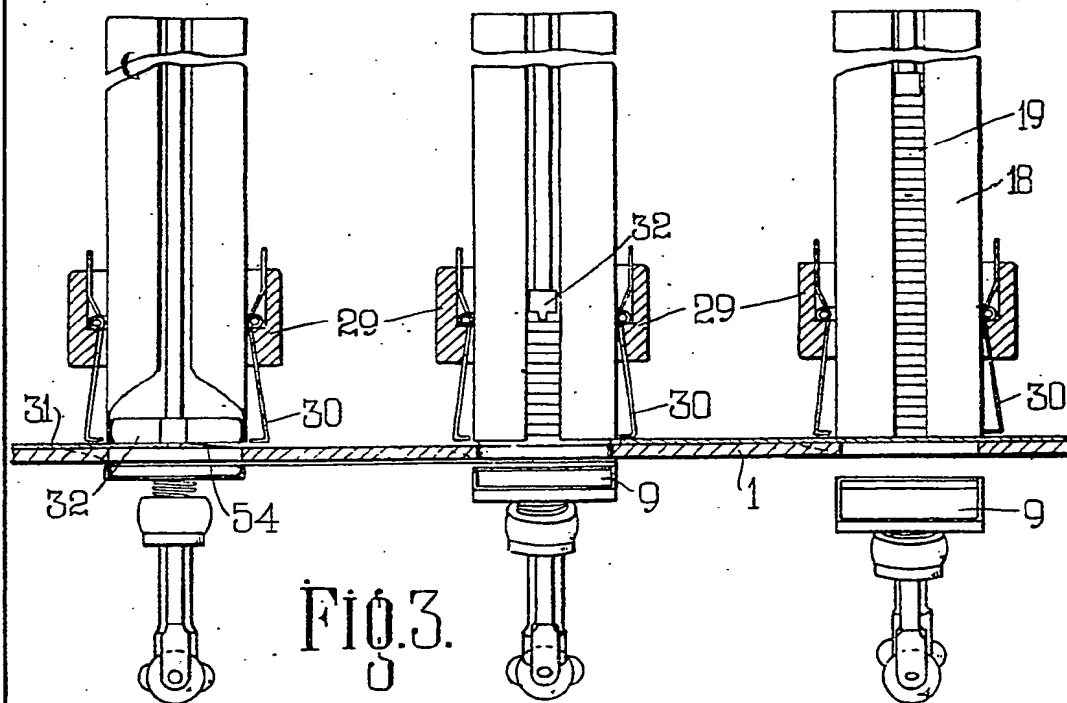
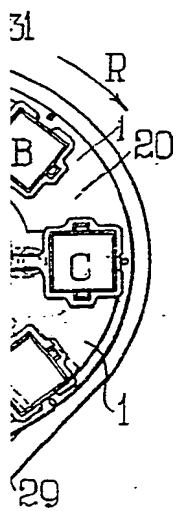


FIG. 3.

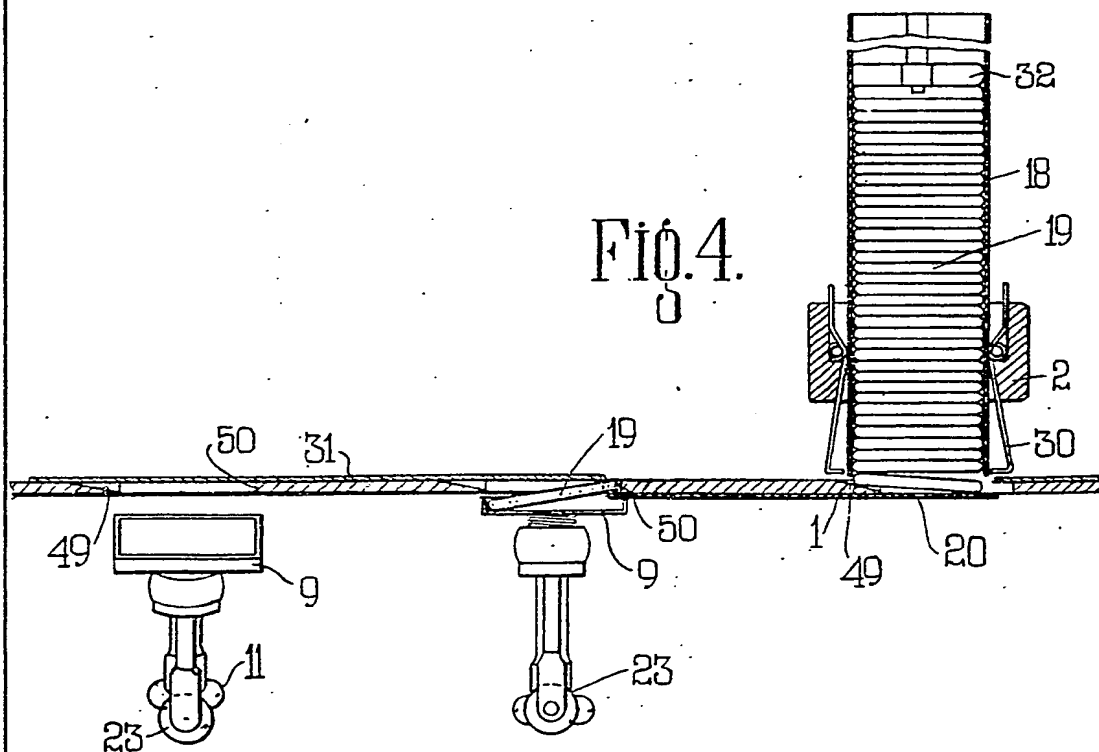


FIG. 4.

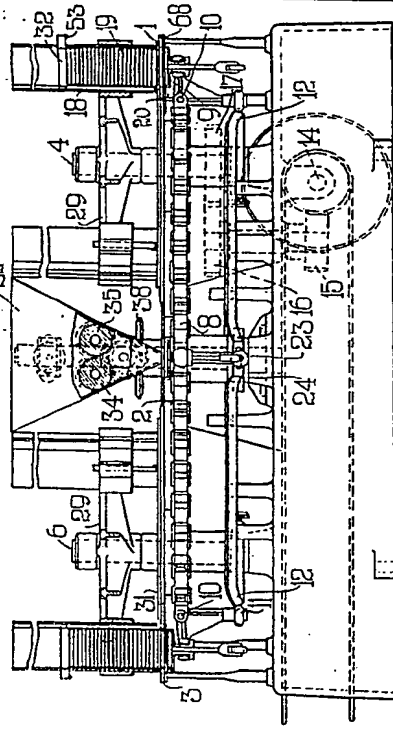


Fig. 1

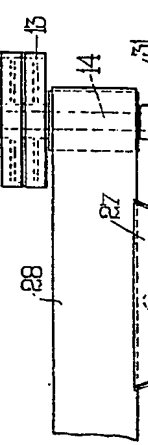


Fig. 2

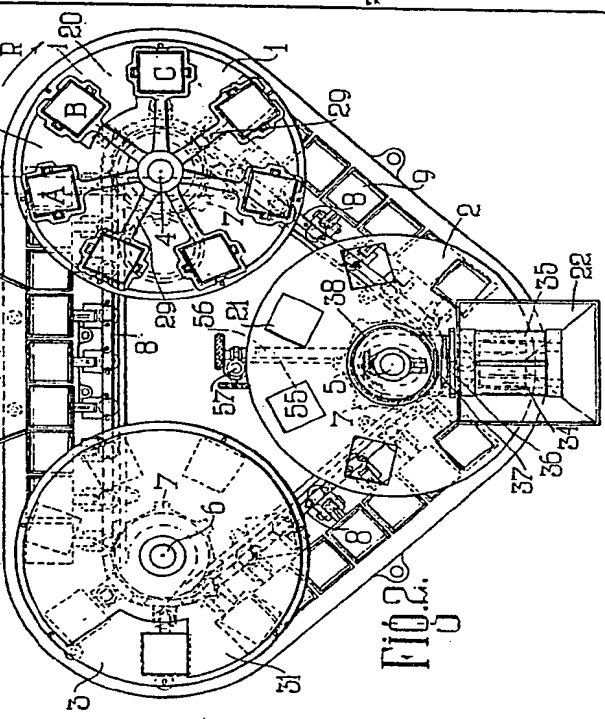


Fig. 3

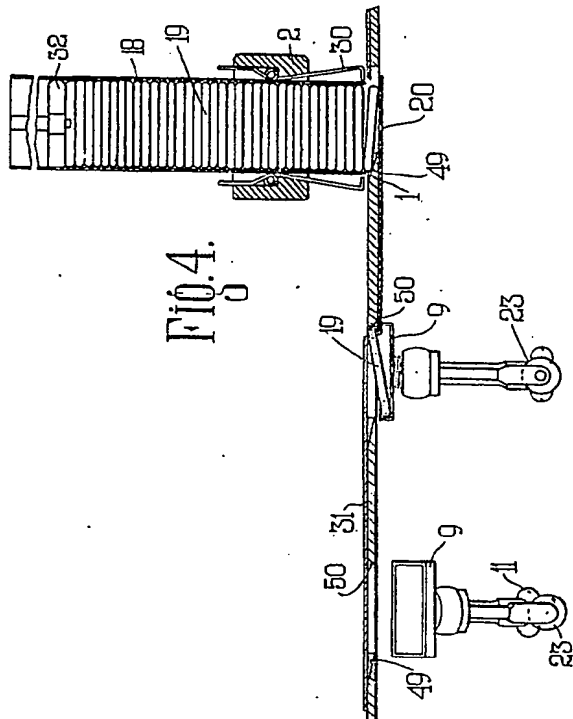
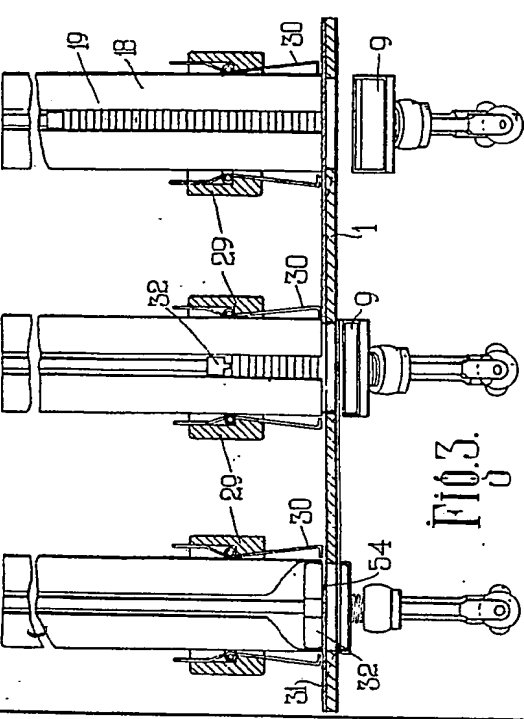


Fig. 4

[This Drawing is a reproduction of the Original on a reduced scale]

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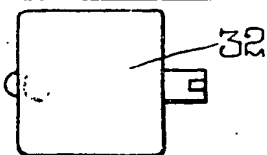


FIG. 6.

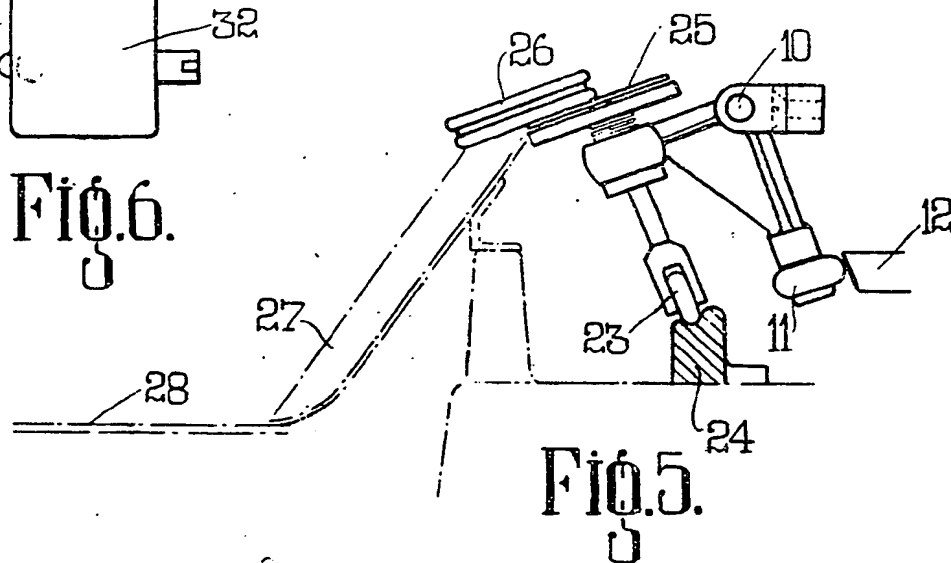


FIG. 5.

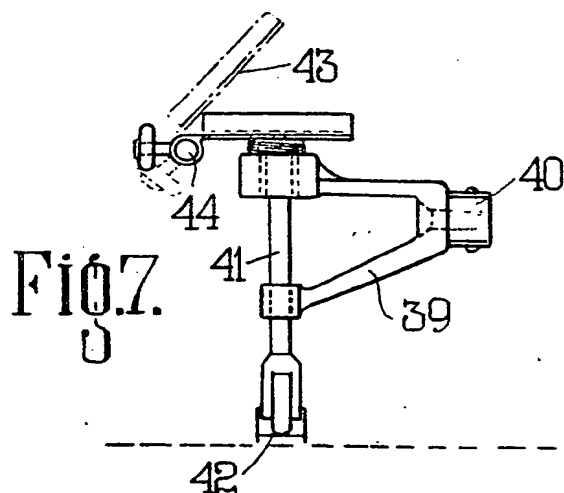


FIG. 7.

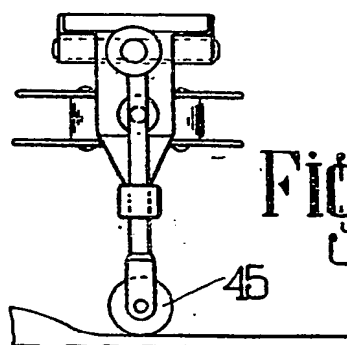


FIG. 8.

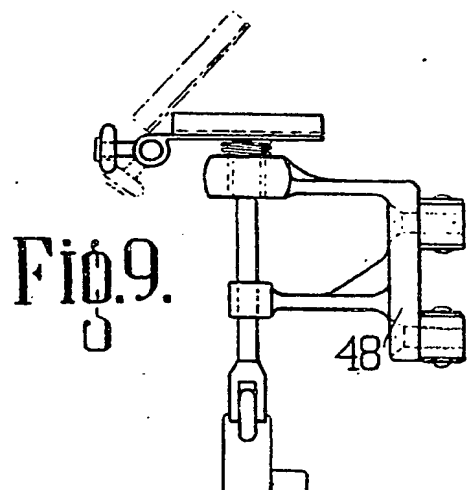


FIG. 9.

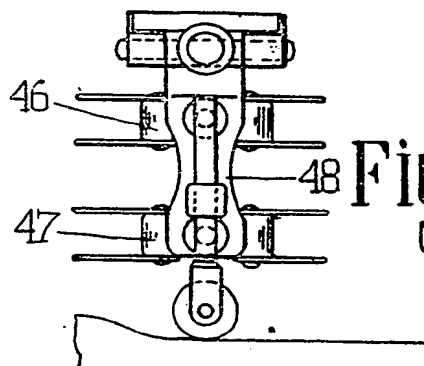


FIG. 10.